

REUSE RECYCLE

the monthly newsletter of resource recycling

Published Monthly—Subscription \$185/Year
Jack Milgrom, Ph.D., Editor
Teresa Wiegand, Associate Editor

TECHNOMIC Publishing Co., Inc.
851 New Holland Avenue, Box 3535
Lancaster, Pennsylvania 17604-3535

ISSN 0048-7457

Second Class Postage Paid At Lancaster, PA 17604

POSTMASTER: Send change of address orders to Reuse/Recycle,
Box 3535, 851 New Holland Avenue, Lancaster, PA 17604.

INDEX JANUARY 1994 TO DECEMBER 1994

ALUMINUM CAN RECYCLING

Postconsumer aluminum recovery rates were down in 1993, p. 5

Aluminum cans major revenue source for curbside recycling, p. 21

Aluminum can recycling rate drops in 1993, p. 29

Alcan Aluminum expands its capacity to process used aluminum cans, p. 47

Aluminum can recycling capacity is expanding, p. 60

Used aluminum beverage can prices are up, p. 60

The aluminum can recovery rate headed up this year, p. 84

ALUMINUM FOIL RECYCLING

Postconsumer aluminum recovery rates were down in 1993, p. 5

Reynolds reports record consumer recycling total for 1993, p. 21

AUSTRIA

Austrian packaging like that in Germany and France will bear a "green dot," p. 40

Viennese reuse or recycle about one-third of their household waste annually, p. 87

2,500 lb/hour scrap plastic bottle sorting line was installed in Gleisdorf, Austria, p. 96

AUTOMOBILE RECYCLING

Ford uses recycled Azdel, p. 28

Saturn in closed-loop recycling, p. 28

Ford to use recycled polycarbonate for headlamp housing, p. 76

BELGIUM

Belgium produces some 4 million tons of household waste annually, p. 80

NV VILAR plans to build a glass container beneficiation plant in Willebroeck, p. 87

Belgium recovered 54% of its glass in 1992, p. 87

Belgium's eco-tax commission decided that on environmental grounds, PVC was neither better nor worse than other packaging materials, p. 95

COMPUTER DISK RECYCLING

Computer disks can be recycled or reused, p. 92

CONSTRUCTION AND DEMOLITION WASTES

Recycled materials in construction to reach 200 million tons in 1998, p. 30

The home-building industry studies reduction, recycling, reuse of construction waste, p. 78

CURBSIDE COLLECTION

Markets continue to be barrier to recycling in cities, p. 30

DEGRADABLE PLASTICS

Degradable plastics trying to maintain their niche, p. 1

American Excelsior introduces degradable cushion packaging materials, p. 83

British chemists develop method to make plastic products biodegradable, p. 90

DIAPER RECYCLING

Toronto considering diaper recycling, p. 93

ENGINEERING PLASTICS RECYCLING

Computer covers now contain postconsumer polycarbonate/ABS alloy, p. 52

EUROPE—GENERAL

European Union environment ministers are ready to set up deadline on the recycling of packaging wastes, p. 8

According to Eurostatistics, municipal wastes generated per capita has been decreasing, p. 24

Association of recycling cities was formed this year, p. 72

The proposed European Union (EU) directive on packaging and packaging waste could become law by the end of 1994, p. 87

The used aluminum beverage can recycling rate in Europe in 1993 was 29%, p. 88

European Commission's directive on packaging and packaging waste was adopted despite opposition from Germany, the Netherlands and Denmark, p. 95

Of the 17 European countries that collected 6.7 million tonnes of glass containers in 1993, nine recovered over 50%, p. 95

EUROPE—PLASTICS

A European consortium has been formed to develop technology to crack polymers into petrochemical feed-stocks, p. 8

European producers of PET have joined in Petcore, p. 16

The European PVC manufacturers have obtained a court decision stopping Greenpeace roadside ads, p. 16

APME reports 70.5 billion pounds of plastics recovered in Western Europe in 1991, p. 16

The ECC has earmarked \$1.7 million to fund research on an automatic identification and sorting system for plastics, p. 24

DuPont is extending its network for recycling Tyvek non-wovens, p. 48

Consumption of recycled resins amounts to 2.5% of total plastic consumption, p. 48

PET bottle recycling rose 28% in Europe last year from 18,000 tonnes to 23,000 tonnes, p. 56

Recent studies by the Association of European Plastics Manufacturers permit a better estimate of use of waste packaging as fuel, p. 56

BPF recently won a decision in favor of vinyl, p. 64

Recycled resin production in Western Europe will increase from 700,000 tons in 1992 to 5.8 million tons in 2000, p. 64

A consortium is developing B.P. Chemical's plastics-to-feedstock recycling process; a 750 tonnes/year pilot plant was commissioned, p. 87

FLEXIBLE PACKAGING

Environmental compliance costs flexible packaging converters \$79 million in 1993, p. 45

FRANCE—GENERAL

The market for recycled materials has turned in France in the last 3 months, p. 48

4.3 million tonnes of packaging wastes generated annually, p. 49

Delta Neu has introduced a new air classifier that sorts municipal solid wastes, p. 64

Eco Emballages has awarded \$4 million to three engineering schools, p. 64

Coping with the German DSD rules is a nightmare for many small French companies that export to Germany, p. 72

Disposable photo cameras are being recycled by Kodak Pathe (the French Eastman Kodak subsidiary), p. 79

Reprocessing of waste oil in France is currently at rate of 85,000 tonnes/year, p. 87

FRANCE—GLASS

Current recycling rate for glass containers is 50% with one public collection unit for every 1,000 inhabitants, p. 72

FRANCE—METAL

SRD processes discarded aerosol cans, p. 32

Affimet will recover and recycle aluminum trays used in a Bordeaux hospital, p. 96

FRANCE—PLASTICS

Recy-PVC formed to recycle PVC bottles, p. 8

Sita and Serta processing sorted plastic packaging wastes into composting bins, p. 8

Valorplast is assisting in the development of bottle-sorting technology, p. 15

In 1993 used foamed EPS produced more than 800 tonnes of crystal polystyrene and 1,200 tonnes of EPS beads, p. 64

Evian and Nestle will abandon PVC bottler for mineral water in the domestic French market and use PET, p. 72

Rhovyl Co., a major chlorofiber producer, recently launched Rhovyl Eco-knitwear based on recycled PVC fiber, p. 79

PET film wastes are collected in France to produce fiberfill, p. 79

ECO PSE formed by 12 polystyrene producers reported that of the 25,000 tonnes/year of expanded polystyrene collected in 1994, 10% was recycled and 30% was incinerated with energy recovery, p. 96

GERMANY—AUTO RECYCLING

Mercedes-Benz and Klockner are cooperating in recycling used autos, p. 24

Behr, Bayer, BASF, EWvK recovers used car radiators made from glass fiber reinforced polyamides, p. 31

Volkswagen and Preussag Recycling will collect used VW and Audi cars at 80–100 centers in Germany for recycling, p. 32

Bruker has instrument to identify materials from autos, p. 47

GERMANY—GENERAL

Citizens in Germany collected 55 kg of used packaging, p. 15

Recycling targets for paper and paperboard reduced, p. 15

Cigarette producers must now replace aluminum foil in cigarette packages with paper, p. 15

Since 1991, when the Green Dot Program (DSD) was

- adopted, packaging used in Germany decreased, p. 31
- The chairman of the board of DSD has resigned in protest, p. 32
- In October, the Green Point fee will increase an average of 40 to 47 DM per capita, per year, p. 32
- RWF considering construction of a 2,000 tonnes/yr plant to recycle drink boxes, p. 39
- Packaging wastes that exceed a specified quota can be incinerated only in combustion plants that operate with an efficiency above 75 %, p. 40
- German DSD system can't fail, p. 43
- The DSD collected 55 kg of wastes from each inhabitant in 1993, p. 47
- German waste contractors are currently constructing 27 new composting plants, p. 63
- KWU has developed incineration process that leaves a residue of only about 3 kg per incinerated tonne, p. 63
- DSD will once again increase the fees for recycling packaging wastes, p. 71
- A German court recently upheld the right of cities and towns to impose local taxes on fast-food restaurants using disposable items, p. 72
- DSD finances improve with a 57% increase in income, p. 79
- Effect of Germany's solid waste policies reduced per-capita consumption of packaging, p. 79
- Munich Airport Authority recycled 59% of the 7,300 tonnes of wastes collected in 1993, p. 79
- Oko Institut suggested a red dot as well as a green dot on packaging to indicate recyclability but at a prohibitive cost, p. 86
- German department stores use more "green dot" packaging than supermarkets, p. 86
- GERMANY—GLASS**
- Maschinenbauanstalt and partners have licensed glass cullet color sorting technology, p. 63
- New glass container recycling facility opened near Berlin, p. 86
- Bender & Co. installed an automated glass cullet sorting facility that removes stones and metal and color sorts the cullet, p. 95
- GERMANY—PLASTICS**
- The German Minister of The Environment has agreed that collected plastic waste can be incinerated, p. 15
- A recycling facility installed in Pirmasens, p. 15
- Companies have joined together to recycle used phone equipment, p. 15
- A plant in Berlin will be recycling film and bottle wastes, p. 24
- BMW expects to recycle half of the 250 kg of plastics in their autos, p. 24
- Further news from Germany concerning tertiary recycling, p. 31
- Herbold and Rosenberger Automationstechnik have developed color sorting line to recycle PVC profiles, p. 39
- Germany continues to promote chemical recycling, p. 39
- Constab Polymer Chemie is marketing special stabilizers for recycled plastics, p. 40
- Export of plastic wastes outside of Europe have increased significantly, p. 47
- Danrec will recycle one ton/hr of German HDPE and PP plastic bottle wastes, p. 47
- Trials of Klockner Stahl in Bremen on the possible use of ground plastics wastes as a fuel in steelmaking units have been successful, p. 56
- Bielefeld, which was the first to impose ban on vinyl building products, has reversed its decision, p. 56
- Due to the DSD System, plastic has lost one-third of its German market share to glass and paperboard, p. 63
- BASF, Bayer and Hoechst helped GIWA produce ten million long-life pallets partly made from PP processing wastes, p. 63
- BASF has commissioned a pilot unit for the mechanical wet washing of plastics wastes, p. 64
- Veka AG recently opened \$18 million vinyl recycling plant in Behringen, p. 71
- DKR awarded a contract to a former E. German company to construct a facility to transform wastes to petrochemicals, p. 79
- Veba Group will chemically recycle commingled plastic wastes into saturated hydrocarbons, p. 79
- German plastics industry now uses polypropylene pallets containing some 50% postconsumer content, p. 79
- German government supports use of PVC for pipe, window frames, cable covers and packaging, p. 86
- Baufeld of Munich will use the Webau process for chemical recycling of plastic wastes, p. 86
- DKR of Cologne revised its forecast for collected plastic waste for 1995–1996 to 530,000 tonnes, p. 95
- Ferromatic demonstrated its sandwich injection molding process that sandwiches recycled resins in a molded part using standard molds, p. 95
- GLASS RECYCLING**
- Continental Recycling, Inc. purchases Rosen cullet, p. 5
- Guidelines are developed for buying and selling glass cullet, p. 5
- Glass recycling rate up for the fifth consecutive year, p. 29
- Recycling glass fiber from thermosets, p. 46
- Coors glass adds processing facility, p. 62
- Owens-Corning acquires equity position in Phoenix Fibreglass, p. 84
- Color-coated glass containers of continued interest, p. 93
- HAZARDOUS WASTES RECYCLING**
- Recycling hazardous wastes using molten metal baths, p. 20
- HDPE RECYCLING—GENERAL**
- HDPE bottle recycling costs can be reduced, p. 9
- Dupont Tyvek® honored for recycling innovation, p. 66
- Hancor pipe now contains postconsumer HDPE, p. 66
- Railroad ties—a possible market for recycled HDPE, p. 75
- DuPont Collects Tyvek® for recycling, p. 91

HDPE RECYCLING—INDUSTRY STRUCTURE

Envirothene doubles its recycled HDPE capacity, p. 75

HDPE RECYCLING—NON-FOOD BOTTLES

Helene Curtis launches another product in

postconsumer HDPE bottles, p. 10

Gasoline additives also in postconsumer HDPE

bottles, p. 10

Clorox may introduce a mono-layer PCR bleach

bottle, p. 10

INCINERATION

Incineration of wastes containing PVC is not a problem, p. 91

ITALY

Unionplast has presented results of their 1991 census of the plastics recycling industry, p. 7

RPE washes commingled plastic wastes and separates them by density, p. 7

Fiat plans to produce air ducts from the polypropylene bumpers, p. 23

Only some 300 municipalities out of over 8,000 have waste plastics collection, p. 23

The Italian plastic industry consortium Replastic will be constructing an incinerator to burn mixed plastics, p. 32

Replastic commissioned automated sorting unit for plastic bottles in Europe, p. 47

Euroteco processes 4,000 tonnes/yr of contaminated polyethylene bags from Germany, p. 48

Himont has joined Fiat's auto recycling scheme, p. 48

Piesse Co. of Milan is providing equipment to recycle commingled plastics, p. 96

LEGISLATION

The Philadelphia government mandates purchase of recycled, recyclable and reusable products, p. 6

States enact 150 new recycling laws affecting business, p. 14

The time is drawing close for California and Oregon to enforce their recycling rules, p. 70

Oregon attains the required recycling rate for rigid plastic containers, p. 92

LITTER

Plastic wastes dominate coastline litter, p. 71

MEDICAL WASTES

Medical waste recycling, p. 52

NETHERLANDS

By the end of 1994, 87% of households in the Netherlands will be served by source-separated waste collection, p. 87

Durable household consumer goods generate about 12,000 tonnes/year of plastic wastes in the Netherlands, p. 87

Wellman's PET recycling plant in Arnhem produces some 22 million pounds of recycled PET annually, p. 95

NORWAY

Borealis, Norsk Hydro and SND formed new joint-venture company to recycle plastic waste products, p. 23

Norway has formed an association to collect paperboard packaging, p. 80

OIL RECYCLING

Chevron participating in used oil programs, p. 22

OPINION STUDIES

Public image the environmental concern of industry, p. 22

College students believe the condition of the environment is worsening, p. 86

PAPERBOARD RECYCLING

Demand for old corrugated containers will exceed supply, p. 54

Recycled-content paperboard packaging for juices, p. 55

International Paper turns waxed corrugated waste into fuel pellets, p. 22

PAPER RECYCLING—GENERAL

Paper recovery goal now moved to 50%, p. 12

International paper introduces degradable paperboard beverage rings, p. 38

A recycled paper alternative to foamed plastic packaging, p. 53

New study projects rising prices and instability in the office waste paper market, p. 60

Old newspaper collection gains, p. 61

Lands' End set goal to use recycled paper in all catalogs, p. 77

Georgia-Pacific Papers offers free GeoCycle® ream wrap to printers and office users, p. 77

Missouri company is first to package drink bottles in paperboard carriers from international paper, p. 78

Short-term prices of old newspapers (ONP) expected to fall, but long-term prices will increase, p. 84

PAPER RECYCLING—INDUSTRY STRUCTURE

Urban paper mini-mills may be the future, p. 6

Kodak opens 50-ton-per-day recycled office-paper pulp facility, p. 46

A new company enters the pulp egg carton market, p. 69

Fort Howard Corp receives EPA award, p. 69

PAPER WASTES—MARKETS

The recycled-paper pencil and a paper house, p. 13

PET—RECYCLED GENERAL

Profitability of PET bottle reclamation is dramatically affected by bottle construction, p. 26

PET plastic reaches record 30% recycling rate, p. 35

PET—RECYCLED FOOD GRADE

Food-contact uses for recycled plastics on the increase, p. 41

New methods of using recycled postconsumer PET in food-contact containers, p. 57

ICI introduces PET packaging film containing postconsumer recycled PET, p. 65

Day Products now makes a food-contact recycled PET, p. 82

New center for processing plastic packaging targeting food-grade recycled plastics, p. 92

PET-RECYCLED—MARKETS

Recycled-content PET fiber entering new markets, p. 11

Road signs made from recycled PET, p. 37
A new fine-denier fiber from recycled PET, p. 51
Xerox introduces transparencies with recycled content, p. 90

PET RECYCLING—INDUSTRY STRUCTURE

Pure Tech to acquire diversified plastics products manufacturer, p. 19
Constar—another integrated PET recycler, p. 25
Dupont installing methanolysis facility to be fed by PET wastes, p. 26
Phoenix Technologies expands its capacity, p. 26
Pure Tech consolidates its PET recycling operations, p. 36
A new PET recycler for California, p. 44
WTe doubling its U.S. capacity for recycling PET bottles, p. 58
Pure Tech International, Inc. announces purchase of interest in Canadian recycler, p. 74
Image Industries continues to expand its recycling capacity, p. 74
Martin Color-Fi buys carpet manufacturer, p. 75
Pure Tech licenses its whole-bottle PET recycling technology to South Korea, p. 90

PLASTICS RECYCLING—GENERAL

Recycling multilayered plastic packaging, p. 2
Plastic labels make durables more recyclable, p. 27
A new resin code proposed, p. 27
HDPE and PET feedstock in short supply, p. 34
Plastics recycling rate edges upward, p. 35
No agreement on new resin code, p. 42
Prices for recycled HDPE and PET going up, p. 51
SPI will continue to use the current resin code, p. 69
The shortage of recycled plastics challenges the plastics recycling industry, p. 73
BP Chemicals introduces its recycled-content polyacrylonitrile, p. 83

PLASTICS RECYCLING—INDUSTRY STRUCTURE

The number of North American plastics recycling facilities continues to increase, p. 36
A new plastics recycler in Florida, p. 76
New chief executive for the American Plastics Council (APC), p. 76

PLASTICS RECYCLING—TECHNOLOGY

A new approach to recycle commingled plastic wastes, p. 81
Wire chopper purchases additional electrostatic metal separators, p. 83

PLASTICS SORTING

Simco/Ramic demonstrates their whole article and flake sorting systems at the National Plastics Exposition, p. 42
MSS announces world's first PVC flake detector, p. 67
APC installs new automated sorting equipment in Oregon, p. 68
Union Carbide, Simco/Ramic sign pact to develop improved sortation processes for plastics recycling, p. 90

POLYETHYLENE FILM RECYCLING

Overwraps—a good market for recycled-content polyethylene, p. 11
Mulch film recycling, p. 11

California is enforcing its recycling-content law for plastic bags, p. 20
Film plastics are being recycled in Los Angeles, p. 91

POLYSTYRENE RECYCLING

Food-contact uses for recycled plastics on the increase, p. 41
Free-flow Packaging Corporation opens new polystyrene recycling facility, p. 75
A novel process for reclaiming foamed polystyrene, p. 82
Amoco transfers polystyrene recycling equipment to PROPLASTIC, p. 82

PVC RECYCLING

San Diego County installs recycled-content PVC pipe in its landfills, p. 43
Portland, OR supports PVC bottle recycling, p. 59
Philip sets up PVC auto recycling program, p. 91

RECYCLED-CONTENT PRODUCTS

New joint venture to make listings of recycled products, recyclers and recycling laws available on line, p. 13
EPA proposes federal purchasing guidelines for recycled-content products, p. 33
The buy recycled movement continues to move forward, p. 62
Pipe makers object to recycled-content rules, p. 67

RECYCLING—GENERAL

A commodity exchange project for recycled materials is set to begin by this summer, p. 4
California will reach its 25% waste diversion goal, p. 55
The buy recycled business alliance includes more than 800 businesses, p. 70
ISRI seeks EPA clarification of distinction between 'solid waste' and materials in the recycling process, p. 78
National recycling rate reaches 21%, p. 93
U.S. may not reach 30% recycling by year 2000, p. 93

REUSE

Reuse, a waste reduction system whose time has arrived, p. 49
Benefits of reusable shipping containers, p. 89

REVERSE VENDING

Pure Tech International, Inc. announces launch of its first reverse vending machine, p. 3

SOFT DRINK CONTAINER RECYCLING

57% recycling rate makes soft drinks America's most recycled packaging, p. 45

SOURCE REDUCTION

Procter & Gamble introduces refill bags for its detergents, p. 37
A new source reduction logo, p. 85

SPAIN

About 1.6 million tonnes of plastic wastes are collected annually, p. 40

STEEL RECYCLING

Steel industry captures 94% of cars for recycling, p. 45

STEEL CAN RECYCLING

Steel can recycling rate up again, p. 38

Tin mill product producers are the major market for steel can scrap, p. 93

SWEDEN

One-way PET soft drink bottles will bear a deposit, effective this spring, p. 23

The Acrylics Division of ICI Chemicals & Polymers Ltd. launched program to recover scrap acrylic, p. 56

Sweden has achieved recycling rates of 85% for aluminum cans and 98% for glass containers, p. 72

Swedish industry to fight a recent Swedish government report that recommends phaseout of most applications of plasticized PVC, p. 80

SWITZERLAND

Tribout, a Swiss glass container collector, plans to recover unbroken bottles in bottle banks and will pay for them, p. 87

Metallum A.G. processes 12,000 tonnes/year of used lead batteries, p. 96

TERTIARY RECYCLING

Is pyrolysis recycling? Oregon's view, p. 17

The Northwest is considering another pyrolysis system for mixed plastic wastes, p. 37

TEXTILE RECYCLING

Recycling denim jeans, p. 85

TIRE RECYCLING

A new player in tire recycling, p. 6

Ford uses old tires for brake-pedal pads, p. 28

Tire-derived fuel—a growing market for scrap tires, p. 38

Old tires make new products, p. 59

Putting rubber back on the road, p. 86

Other applications for old tires, p. 86

UNITED KINGDOM—GENERAL

Old newspaper and magazine recycling in the UK has reached a 34% rate, p. 7

Glass container recycling in the UK reaches a 26% rate in 1993, p. 23

Britain's first MRF has operation 60 miles north of London, p. 23

A "Producer Responsibility Group" has been set up to increase recycling in the UK, p. 32

London Waste Regulation Authority plans to increase incineration capacity with energy recovery, p. 39

U.K. government plans to go ahead with its own packaging waste legislation, p. 79

In Portsmouth, recyclables are sorted by the household, placed in separate plastic bags and hooked on the sides of containers, p. 80

Baled used aluminum cans sold for 59¢/lb at the end of November, p. 95

UNITED KINGDOM—PLASTICS

Stanley Smith & Co. has developed high-value construction panels by compression molding commingled plastic packaging wastes, p. 7

Rapra Technologies has shown that its "cavity transfer mixer" greatly speeds up the glycolysis of polyurethanes, p. 7

The British Plastics Federation has issued a proposal to meet the government's call for recycling 50% of all packaging wastes by 2000, p. 15

Used phones and computers from British Telecom are being reclaimed by a Welsh recycler, p. 23

About 6% of UK's municipal solid wastes is plastic packaging wastes, p. 23

ICI and British Coal will be evaluating polymer wastes as fuel, p. 39

ICI will recycle polymethylmethacrylate sheet waste, p. 80

